

## POINTS ABOUT TIME.

VARIATIONS AND THE CAUSES WHICH PRODUCE THEM.

The Earth's Revolutions on Its Axis, Together with Its Journey Around the Sun, Are the Disturbing Factors—No Watch Is Perfectly Reliable.

If there is one single scientific problem upon which more than another people appear to get mixed that problem is time. Standard time, local time, sun time are exceedingly difficult problems for the public to puzzle over, and when sidereal time enters the calculation the case is hopeless indeed. I have frequently of late seen so many letters addressed this and other journals, all touching upon one or the other of these chronological questions, that I have concluded a short note explaining the main points of difference would be, at any rate, timely. If it only suggests to the young men in the business offices the idea of going to work at 9 a.m., local mean time, and leaving off promptly at 4 p.m., Pacific standard time, the question will have been shown to possess a practical side. The application of it, however, is purely a matter of taste.

Well, to come to time, the great chronometer and regulator in chief to the business, social and scientific world is the earth itself. Turning upon its axis in the period which we divide into twenty-four hours, the sun appears to cross the meridian of each place on the globe once in that interval. The moment at which it crosses the meridian of any place (Greenwich, for example), is termed "local apparent noon" at that place. This would be all very well if the earth and sun remained fixed in their relative positions; or if the earth, completing, as it does, an annual revolution about the sun, did so uniformly in a perfect circle and that circle were in the same plane with the motion of daily rotation. Then the successive intervals between the meridian passages of the sun at Greenwich would all be equal, and a perfect chronometer set at 12 hrs., 0 min., 0 sec., when the sun transited today would indicate precisely the same instant for "apparent noon" at every date.

## MOTIONS OF THE EARTH.

But the earth's path around the sun is not a perfect circle; it is an ellipse, and the motion in one portion of the ellipse is more rapid than in another, and this causes a slight variation in the intervals between the solar passages. Again, the plane of the earth's path around the sun, or the ellipse, is inclined 23½ degrees to the plane of the equator in which the daily rotation takes place, and consequently twice a year the intervals of "apparent noon" are each about twenty seconds greater and twice a year about twenty seconds less than twenty-four hours. To explain just why this results would require more of an investigation into astronomical principles than is here contemplated; but it is so, nevertheless, and any text book will elucidate the reasons. A combination of the two effects causes the sun to be apparently slow fourteen minutes in February and fast sixteen minutes in November. But in the course of a year the average comes out all right, and therefore a "mean solar day" of exactly twenty-four hours is adopted in the almanacs and used for all purposes. This accounts for the difference between mean time and sun time. A regulator keeps the former; a sun dial indicates the latter.

A few years ago (or prior to 1884) every large city in the United States had its own local time, and this was for each place the true mean solar time, obtained as above indicated.

## REGULATING TIME.

Consequently, a man traveling westward from Washington would find his watch fast, as follows: At Chicago, 42 minutes; at Omaha, 1 hour 16 minutes; at Denver, 1 hour 32 minutes; at Salt Lake City, 2 hours 20 minutes, and finally, at San Francisco, 3 hours 2 minutes. It will readily be recalled how much annoyance was occasioned by all these various corrections, both to trainmen and travelers. About the year mentioned a great reform was inaugurated. Nowadays a traveler going westward finds his watch fast from time to time, but only the hour hand is in error. All the clocks in the country indicate the minute and second of Greenwich mean time, but the hour is changed for each 15 degs. of longitude. Washington time is 5 hours slow of Greenwich; Chicago, 6 hours; Denver, 7 hours. In San Francisco we are 8 hours slow of the prime meridian. All the intermediate cities and towns are run on one system or another, according to their location in longitude, the standards being eastern, central, mountain and Pacific time. All the time pieces on the coast are set by Pacific standard time, which is 8 hours slow of Greenwich mean time. Therefore, a watch which is set at San Francisco solar time by means of a corrected sun dial is still 9 minutes 42 seconds slow of a Pacific standard time clock, because we are that much in longitude west of the 120th meridian, which forms the eastern boundary of northern California and on which only is the "Pacific time" coincident with "local mean time."

—San Francisco Examiner.

## A Lord in a Ditch.

Lord Mulgrave was distinguished by a singularity of physical conformation, having two distinct voices, the one strong and hoarse, the other weak and querulous, of both of which he occasionally availed himself. So extraordinary a circumstance probably gave rise to a story of his having fallen into a ditch on a dark night and calling for aid in his shrill voice. A countryman coming up was about to help him, but Lord Mulgrave, addressing him in a hoarse tone, the peasant immediately exclaimed, "Oh, if there are two of you in the ditch you may help each other out of it." —London Tit-Bits.

The most useful domestic pet of the natives of Greenland and other Arctic climes is a peculiar looking animal, to which the name of Eskimo dog has been given.

## A LITTLE GIRL'S RAG BABY.

It Proves a Big Factor in Raising Funds for a Church.

Dolls are usually considered about the cheapest articles in the juvenile feminine equipment, and while it is true that many a little miss owns dolls, each of which cost as much as the entire wardrobe of some of the living children of those less favored with this world's goods, these are the exceptions to the general rule. The most primitive form of doll perhaps is the rag baby, that indescribable something constructed from the tatters of the household. There is one thing, however, about the rag doll which cannot fail to excite admiration. Let her be put among ever so many handsomer sisters, she is certain to hold the warmest place in the regard of the common mamma, be she the child of rich or poor parents. But the rag doll has until recently never done anything to make her a name famous.

LYDIA E. BYRNES. The nicely dressed French baby—bedecked and bejeweled sometimes—has on numerous occasions figured prominently in voting contests and on raffle lists at fairs, but it remained for little Lydia Edna Byrnes, of Brooklyn, a child not yet four years old, to rescue the much abused rag doll from the oblivion to which she has been so long and so unjustly consigned and make her a prominent factor in financial circles. And it all came about in this way:

Lydia owned but one doll, and it was made of rags, a nondescript sort of baby with a particularly "open" expression of countenance, but evidently lacking in force of character and cohesiveness. Lydia's father, Rev. Horace W. Byrnes, is the new pastor of an old church in Brooklyn, formerly known as the Cedar Street Methodist, but now designated as the Epworth M. E. church. Mr. Byrnes was confronted with the serious task of raising the funds necessary for the erection of a new church, and one morning at breakfast discussed the matter with his good wife, when it was determined that the work should begin at once. Little three-year-old Lydia Edna sat at the table looking as wise as an owl and evidently cogitating deeply. Then she offered her baby—the rag doll—as her contribution toward the new church. Every one laughed, said the child was cute and then thought no more of the matter.

Not so, however, with Lydia. When she went to church dolly was with her, and when her father spoke to his congregation of the necessity of raising funds at once and the lull succeeding the first few subscriptions had arrived, as it always does on such occasions, Lydia got out of her pew before any one could stay her, and walking demurely down the aisle handed to the minister her rag doll—her all—as her free will offering. Immediately there were additional subscriptions, and before the services closed several thousand dollars had been raised, and the congregation has felt warranted in going ahead on the work for the new church. It is believed that at least \$1,000 will be contributed directly in the name of the ex-mother of the hitherto despised, but now greatly respected rag baby. It is said that several of the parishioners of Mr. Byrnes intend to buy a glass case for Lydia's doll and deposit it, with a suitable inscription, in the reading room of the new church as soon as that edifice shall have been completed.

## How Leap Year Beans Grow.

A curious belief about leap year, says a New York paper, is perhaps not so well known as the ladies' privilege. Rustic folk in many parts of England firmly believe that in leap year all kinds of beans are produced in the pods in the reverse position to that which is usual, or, as an old laborer in Surrey once phrased it, "in leap year the eye is to the point, in other years to the strig." That is the stalk. There is ample evidence that in the last bissextile, 1888, in many widely separated parts of the country, the beans were observed to be produced in the pods in this manner, and the rustic belief that this was caused by the fact of its being leap year was naturally strengthened. But by some agriculturists the phenomenon was taken to be a sign of plenty, and there is no doubt that beans grow in this manner in other years than the bissextile; but whenever the occurrence happens to coincide with the latter, the superstition is sure to revive.

## The Result of an Accident.

A Boston correspondent says that the incident which shaped the professional career of the late Paul Dillingham, ex-governor of Vermont, was cutting his foot with an ax while chopping trees when he was about twenty-one years old. Although disabled only for a time, he had a slight limp all the rest of his life in consequence of this painful mishap. While recovering from the immediate effects of the blow he spent many hours in general reading in a lawyer's office, and this led to his looking into the law and finally adopting it as his profession.

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